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ABSTRACT

This monograph presents an assessment instrument that utilizes teacher and student behavioral indicators to assess the quality of inquiry instruction. The instrument provides teachers with feedback which not only assesses the presence of critical teaching skills, but also serves as a valuable training aid for helping them perceive how their own behaviors and responses could be modified to more effectively facilitate student learning. It is equally useful as a training aid for preservice or in-service teacher training, in laboratory or classroom settings. The Inquiry Teaching Competency Assessment (ITCA) is being used in the Weber State College performance based teacher education program, where validation studies are being conducted to evaluate its effectiveness in improving teacher inquiry instruction. (Author)

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ASSESSMENT OF INQUIRY COMPETENCIES
IN A PERFORMANCE-BASED
TEACHER EDUCATION PROGRAM

by
Richard H. Blake

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ASSESSMENT OF INQUIRY COMPETENCIES IN A PERFORMANCE-BASED TEACHER EDUCATION PROGRAM

by
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An Instrument for Assessing
Teacher Inquiry Competencies
1983

PREFACE

Improvement of teaching occurs most rapidly when specific behavioral feedback is available to individuals after they have received instruction and begin to practice a new teaching skill (Stone & Nielsen, 1982). Assessment tools are often utilized for providing precision feedback to help individuals perceive how their performance can be improved. Few such tools are available, however, for assessing the presence of basic teaching skills that are essential for student inquiry learning to occur.

This monograph presents an assessment instrument that utilizes teacher and student behavioral indicators to assess the quality of inquiry instruction. The instrument provides teachers with feedback which not only assesses the presence of critical teaching skills, but also serves as a valuable training aid for helping them perceive how their own behaviors and responses could be modified to more effectively facilitate student learning. It is equally useful as a training aid for preservice or in-service teacher training, in laboratory or classroom settings.

The Inquiry Teaching Competency Assessment (ITCA) is being used in the Weber State College performance based teacher education program, where validation studies are being conducted to evaluate its effectiveness in improving teacher inquiry instruction.

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ASSESSMENT OF INQUIRY COMPETENCIES IN A PERFORMANCED BASED TEACHER EDUCATION PROGRAM

INTRODUCTION

In recent years, increased attention has been given to training students at all levels to be analytical and critical thinkers. Piaget' said:

> The principal goal of education is to create men who are capable of doing new things, not simply repeating what other generations have done... The second goal...is to form minds which can be critical, and not accept everything they are offered... We have to be able to resist individually, to distinguish between what is proven and what is not. So we need pupils who are active, who learn early to find out by themselves, partly by their own spontaneous activity and partly through material we set up for them; who learn early to tell what is verifiable and what is simply the first idea to come to them. (Ripple and Rockcastle, 1964, p.5).

Inquiry learning has emerged as a prominent method for developing the kinds of critical thinking skills to which Piaget' and others have referred.

Inquiry teaching is characterized by a variety of approaches. To some it refers mainly to the types of questions teachers ask (Blosser, 1975). To others it is tantamount to an emphasis on learning process skills (Fraser, 1978,1980). Yet others characterize it mainly by the student's role in initiating, questioning, and learning independently (Suchman, 1966).

The position taken by this author is that a number of conditions are essential for inquiry learning to occur on a consistent basis. Since the purpose of this monograph is to assist in training teachers in techniques that foster inquiry, these conditions are defined in terms of teacher behavior competencies to be attained.

The question is posed, "What are the skills necessary for effective inquiry teaching?" To answer this question, the author identified basic inquiry skills that emerge as recurring themes in the literature, and from his own experience in critiquing video taped inquiry microteaching sessions of hundreds of students in the performance based teacher education program at Weber State College. The skills thus identified are reported and described in the following sections.

TEACHER SKILLS THAT PROMOTE INQUIRY

Evidence suggests that a crucial factor in inquiry teaching is a clear vision in the teacher's mind of what it means to be a learning facilitator. Teachers must extend themselves beyond traditional roles (such as "information disseminator" and "directions giver") and become promoters of discovery learning -- interested and involved fellow explorers with their students. They must learn to walk the middle ground between too much involvement (taking over), and too little involvement (letting students flounder and become discouraged). As learning facilitators, teachers are able to keep students engaged in cognitive activity, searching for insights, data, and relationships.

Process-centered instruction is a crucial instructional approach for inquiry teaching. Process instruction means that a significant emphasis in teaching will focus on students learning to solve problems and to figure things out for themselves, rather than focusing mainly on acquiring facts and information. Students who are skilled problem solvers and analytical thinkers will be better equipped to solve problems in all areas of their lives (Victor, 1980, pp. 12-15).

In order to focus upon process instruction, a teacher's approach to teaching often must be redirected to center on skills involved in learning how to learn (e.g., classifying, experimenting, comparing, evaluating, etc.) rather than on content objectives (e.g., names of minerals, or the number of starving people in third-world countries, etc.). Several basic process learning skills are elaborated in a later section. A teacher should identify specific process skills to be taught and practiced in conjunction with various curricular topics and/or units that will be taught throughout the course of the school year.

Another inquiry skill area pertains to teacher questioning techniques. Open-ended questions (that cannot be answered with short "yes," "no," or factual-type responses) are essential for the development of analytical thinking skills (Blosser, 1975). In addition to being open-ended, it is essential that questions be focus-setting to give direction and define a purpose for the inquiry. Focusing, however, is not a one-shot activity. It involves directing and redirecting students' attention to discrepencies, and clarifying, when necessary, to encourage continued productive thinking. Too often students find false satisfaction in a theory without really testing whether or not the theory matches reality. Nothing discourages inquiry more than inadequate or oversimplified explanations that provide hollow feelings of unjustified closure (Suchman, 1965). One way to provide focus is to confront students with a problem or event that puzzles them. Such an event may be referred to as discrepant in the sense that it presents a phenomenon that does not coincide with the student's knowledge and understanding of the world. A gap is created between what the student perceives and what he "knows". The discrepant event provides initial motivation and focus for the inquiry until a meaningful hypothesis is generated to stimulate further investigation.

Wait-time, which refers to thoughtful periods of silence, is another important aspect of questioning technique. Wait-time allows students a moment to think about questions prior to responding, and to ponder their own words and ideas after a response. Rowe (1974) demonstrated that the quality of verbal interactions increases significantly when the average wait-time is about five seconds. These periods of silence allow teachers to model "thinking behavior" for students by their own thoughtful expressions.

Teacher reinforcement of pupil performance is another important skill area. In typical education programs, teachers are taught to reinforce positive pupil behaviors to insure that the behaviors will continue. Rowe (1974a) found, however, that the practice of consistently praising student responses has an adverse effect upon the inquiry process and creates dependency rather than independence. She found that when fewer verbal rewards are given, task persistence is greater, the number of alternate responses increases, and more student-student interactions occur. Reinforcement should focus upon the quality of thinking exhibited by students, rather than being general in nature. A teacher response of "Very good", would be better worded, "Good thinking!", or "Why do you think that may be so...?"

Nonverbal reinforcements such as undivided attention, effective use of eye-to-eye contact, and contemplative facial expressions are also very effective, and frequently communicate more meaningfully than words.

Somewhat related to reinforcement is the teacher's attitude of accepting and valuing student ideas and responses in non-sanctioning ways. Teachers must refrain from providing authoritative answers to student queries and avoid the obvious impression of leading students to particular conclusions. Let students decide the validity of the ideas they come up with by testing to see if they hold up under scrutiny. Young people need to learn to live with uncertainty as they inquire and explore. Teacher sanctioning (indicating "rightness" and "wrongness" of student responses) creates dependency relationships, whereby students tend to give responses they feel will please their teachers (Rowe, 1974a). So often they are denied the satisfaction that comes from genuine discovery. Teacher non-sanctioning responses such as "That's an interesting point that we haven't thought of before!", or "I see... how could we test to find out if that is true?", will do much to stimulate further thinking.

Students are not likely to volunteer very much if they feel unsafe or inadequate. The teacher must foster a positive, accepting climate where students are confident that their responses (and they as individuals) will be accepted by the teacher and by other students. This does not mean that students should never be told that their responses are incorrect, but such feedback must be skillfully phrased to encourage them to continue thinking, to modify their ideas if necessary, and to continue to search for accurate data and valid relationships.

ASSESSMENT OF INQUIRY COMPETENCIES

In order for teachers to improve their inquiry teaching skills, it is necessary to be able to assess these skills when they are working with students. While a number of instruments are available for assessing process learning (AAAS, 1973; Bluhm, 1979), little is available for a composite assessment of skills that comprise inquiry teaching.

What is needed is a short competency based inquiry assessment that is easily administered, and that can be used in teacher training programs where inquiry methods are taught. Such an assessment would also be valuable for helping teachers to assess their own inquiry teaching skills. The Inquiry Teaching Competency Assessment (ITCA) was designed to fill this void. The seven skill areas shown on the instrument encompass the basic inquiry skills that were reported and discussed in the previous section.

INSTRUMENT DEVELOPMENT AND UTILIZATION

The Inquiry Teaching Competency Assessment (ITCA) focuses on seven broad skill areas, each of which is essential for effective inquiry teaching. (A copy of the instrument appears in the Appendix.) It was developed as an instructional aid and behavioral assessment in the Weber State College performance-based teacher education program. The instrument assesses basic teacher inquiry skills and is specially suited for training teachers who have had limited prior exposure to inquiry methods.

Performance in each of the skill areas is rated by observable indicators that describe various quality-levels of teacher competence. The indicators are ranked from unacceptable to high quality, with points ranging from a low of zero, to a high of two or three for each item.

The following procedure is recommended for utilizing the ITCA instrument in teacher training or teacher development programs. After an initial introduction to the basic inquiry approach, the trainee is introduced to the instrument, and then studies the skill areas and performance indicators described in the following section of this monograph. Next a demonstration inquiry session is provided (either live or video taped, in a regular classroom or simulated setting) where trainees can observe and rate the demonstration teacher's skills on the ITCA instrument. This is followed by a discussion of the observations. Students are then ready to identify a "problem" and demonstrate inquiry teaching competence in a peer teaching, microteaching, or actual classroom setting, where a rating will be made by the instructor. The total points for the seven skill areas are summed to determine if an overall mastery level of competence has been demonstrated. (At Weber State College a minimum of twelve out of a possible fifteen points is required for successful completion of the microteaching portion of the inquiry teaching unit). Finally a conference is conducted by the instructor using the ITCA to provide the teacher with feedback on the strengths and weaknesses of the lesson, to reinforce strong points, and to make suggestions for further growth. Supplementary learning experiences are prescribed when performance demonstrations do not meet the established competence level of twelve (12) points, or when a zero (0) rating appears in any of the skill areas.

SKILL AREAS AND INDICATORS DEFINED

In any performance-based assessment there is risk that focus upon discrete skills will obscure the holistic process by which the skills are integrated to produce the desired outcomes (Cronbach, 1972). Each of the items on the ITCA is carefully worded so that important interrelationships of the skills combine into a synergism that constitutes effective inquiry technique.

In some instances words have been used in performance indicators that are less behavioral than alternate words which might have been chosen. Though this places greater responsibility for judgement upon the rater, such words were selected because they more accurately communicate the true meaning intended for the skill area.

The following explanations are intended to summarize and clarify the items on the instrument:

Skill Area #1 (Teacher-Student Roles)

This area refers to how well the teacher demonstrates a clear understanding of the "learning facilitator" role, and how effectively pupils are encouraged to be active participants in the learning process. Teachers who demonstrate interest and curiosity in the learning activity can usually create a contageous enthusiasm that spreads to all pupils in the group. Teachers who become actively involved alongside their pupils are modeling the kinds of inquiry behaviors that they desire pupils to emulate.

Occassionally pupils become disruptive by doing things that distract others from productive thinking. Although the teacher desires to not directly control the pupils, he/she is still the teacher -- and thus is responsible for maintaining an orderly climate, where productive thinking can take place.

The behavioral indicators for Skill Area #1 are:

High-quality Indicator (2 points): Pupils centrally involved, figuring-out, and questioning. The teacher appears curious and genuinely interested; may ask probing questions, discuss observations, focus attention, seek to involve other participants, and/or offer encouragement; does not control the direction of the inquiry experience nor lead pupils to the answer, but evidences an expectation that pupils focus their attention and engage in analytical thinking

Marginal Indicator (1 point): Teacher either appears over-zealous in guiding the inquiry experience (unable to permit pupils self-direction), or seems passive and unclear about how to promote inquiry. Pupils are somewhat involved in the inquiry experience, but are not encouraged to assume initiative; the "message" is not clear that they may proceed on their own.

Non-Indicator (0 points): Teacher disseminates information and appears to assume full responsibility for the success of the learning experience

Skill Area #2 (Process Learning Skills)

Process-centered teaching has been typified as teaching by which teachers and pupils study scientific phenomena with the approach and the spirit of the scientist (Kuslan and Stone, 1972). In such a setting the instructional goals focus on learning how to learn--how to solve problems, and figure things out--rather than upon merely acquiring a particular body of knowledge.

Though process learning skills have been identified at varying levels of sophistication, some of the more basic skills have been selected for this instrument because of their value in helping teachers who are relatively inexperienced in inquiry teaching procedures to begin thinking in terms of process learning outcomes. Following is an explanation of some of the more common process skills as they appear in item #2.

A. Hypothesizing -- pupils are encouraged to formulate and test hypotheses. An hypothesis is more than a predication--it is a statement of what is believed to be a general principle, or relationship between two or more variables. Some examples of elementary level hypotheses are:

- Sound travels through air, liquids, and solids.
- Gravity pulls things toward the earth's center.
- Drops of liquid attract each other.
- Warm air rises and cool air lowers.

Inquiry learning is generally more successful when learners state an hypothesis in writing. This may be done near the beginning, or as the inquiry progresses, depending upon the nature of the problem and experience of the investigators. In either case, the focus of the inquiry should be on testing the validity of the hypothesis by collecting and analyzing data so a determination can be made as to whether data confirm the hypothesis, or call it into question. If an hypothesis seems questionable, it should be modified and restated so the process of testing can resume.

B. Collecting & Interpreting Data -- pupils search for data and relationships that either confirm or call into question the stated hypothesis(es). Data may be in many forms, e.g., observation records, noted exceptions, numbers, classifications, etc.

C. Measuring/Using Numbers -- pupils use quantitative units of measurement in ways so that learner's ability and confidence to measure and use numbers is increased. Non-traditional units of measurement may be used (e.g., hand spans or strides), and the use of metric measurements is encouraged.

D. Estimating/Predicting -- pupils are encouraged to estimate answers prior to making computations, and then to compare the estimated and computed values; and/or to predict the anticipated outcome of an event or experiment, and then collect data to confirm or modify their thinking. Predicting is a simple form of hypothesizing, that usually involves single events or occurances.

E. Classifying/Seeing Relationships -- pupils make decisions about grouping objects or concepts into logical categories, and/or observe relationships between variables. (Leaves, for example, might be classified by many criterion variables, such as color, size, vein structure, shape, etc.)

F. Comparing/Contrasting -- pupils examine objects or ideas to determine and explain similarities and differences.

G. Experimenting -- pupils manipulate objects, equipment, or gadgetry in seeking to discover solutions or relationships.

H. Analyzing/Verbal Reasoning -- pupils analyze, discuss, and reason together to discover clues, relationships, and solutions. (Students simply talking does not mean that verbal reasoning is occurring, unless the discussion focuses on critical analysis of observations or ideas.)

I. Considering Alternatives -- pupils receive guidance in viewing problems and ideas from various perspectives, rather than following a single, linear approach to thinking or problem solving.

J. Planning For Use of Other Resources -- pupils evidence an understanding that information and solutions may be obtained from a variety of sources, including books, visuals, models, knowledgeable people, etc.

The behavioral indicators for Skill Area #2 are:

High-quality Indicator (2 points) : The lesson centers upon the pupils learning and practicing process skills, rather than upon information-learning or following certain set procedures. Additionally, evidence suggests that pupil learning skills actually increased as a result of the inquiry session.

Marginal Indicator (1 point): The lesson is partly content centered, though the teacher does allow pupils some involvement in process learning. Or, evidence suggests that pupils are repeating the use of process learning skills at levels previously learned -- thus, actual increase in pupil skill levels as a result of the inquiry is questionable.

Non-Indicator (0 points): The lesson is content centered, aimed at teaching a specific body of knowledge or set procedure.

Skill Area #3 (Open and Focusing Questions)

Open, thought-provoking questions are essential for fostering pupil inquiry and discovery learning. Such questions anticipate a wide range of acceptable responses, often drawing on pupils past experiences. They also cause learners to state and justify opinions, to draw inferences, and to make judgements based upon their own values and standards. While most open questions are of the "how" or "why" variety, it is incorrect to assume that all such questions are automatically open (i.e., if the teacher is implicitly looking for a specific answer). Open questions must also be focus-setting to guide the inquiry sessions. If focus is not established, the searching is diffuse and learning often ends prematurely "...in a quagmire of unjustified closure" (Suchman, 1965).

Three kinds of open questions are advocated to facilitate different stages of the inquiry learning experience: 1. eliciting questions to encourage responses from all participants (e.g., "What did you see?" or "Who else has an idea?"); 2. probing questions to expand or extend ideas (e.g., "What else might we say about this?"); and 3. closure-seeking questions to help students formulate conclusions or plans for further investigation (e.g., "What are the important things we have discovered?") (Esler, 1973, Chapter 3).

The behavioral indicators for Skill Area #3 are:

High-quality Indicator (2 points): Open questions are used by the teacher consistently, and appropriately to facilitate inquiry learning (i.e., in attempts to elicit participation of all students, to engender critical thinking, and to provide focus).

Marginal Indicator (1 point): Some open questions (1/3 to 2/3) are observed, but with limited effectiveness; more open questions would do much to facilitate inquiry learning (i.e., elicit participation, engender critical thinking, and provide focus). Focus was weak in that teacher questions seemed aimless, and did not move the searching along in some concerted (though not predetermined) direction.

Non-Indicator (0 points): Few open teacher questions are observed (less than 1/3); and questions do little to facilitate the inquiry. It is not uncommon for the teacher to lead too much (too much focus) when a high percentage of teacher questions are closed.

Skill Area #4 (Reinforcement)

Behaviors that are reinforced are more likely to be strengthened and recur. Thus, the teacher's goal is to selectively reinforce pupil "thinking behaviors" (rather than reinforcing all responses equally) so that students become accustomed to in-depth thinking more often. Esler (1973) suggests that teachers should reinforce students for merely participating near the beginning of an inquiry session to get it going, and at other times when special encouragement is needed; but for the main part "thinking behaviors" should be selectively reinforced to promote more analytical and productive student thinking. Selective verbal encouragement keeps learners thinking, and reduces pupil responses aimed at pleasing the teacher (Rowe, 1974a). Direct eye contact, facial expressions, undivided attention in listening, and body positioning are some of the non-verbal motivators used by teachers to encourage learners.

The behavioral indicators for Skill Area #4 are:

High-quality Indicator (2 points): Teacher uses verbal and non-verbal reinforcement to promote analytical thinking, and attempts to get all pupils involved in the inquiry activity by differentially reinforcing students according to their individual motivational needs.

Marginal Indicator (1 point): Teacher reinforcement (verbal and/or non-verbal) is evident, but is indiscriminately used. Pupil participation behaviors are universally reinforced, with seemingly little emphasis on, or expectation for higher levels of productive thinking.

Non-Indicator (0 points): Little reinforcement is evident to encourage student inquiry. Enthusiasm for learning seems lacking because of insufficient encouragement from the teacher.

Skill Area #5 (Non-sanctioning)

The effective inquiry teacher acknowledges and reinforces students' ideas and contributions without evaluating the "rightness" or "wrongness" of each one. This is an important factor for stimulating learning through inquiry, since students have often been conditioned to watch teacher facial expressions and listen to voice inflections to discern clues about the "worthiness" of their contributions. These kinds of sanctioning behaviors are counter-productive to the development of critical thinking skills. High rates of teacher sanctioning tend to undermine self-confidence in learners. Rowe (1974a) says: "It is in preserving for ourselves the right to be wrong, that we gain confidence to try out new ideas, to explore alternatives, and to objectively evaluate our own work as well as that of others."

Another form of implicit sanctioning that stiffles inquiry is when the teacher accepts short, pat answers from learners without probing or questioning. When this happens, pupils are led to believe that they are satisfactorily accounting for apparent discrepencies that they encounter by offering simple buzz-word explanations. Some commonly heard pat answers are "gravity", "suction", "air pressure", "hot air rises", etc. The skilled teacher acknowledges such contributions, but probes for deeper meanings with responses such as: "Yes, there is obviously suction, but we're trying to discover what suction is..."; or "O.K., we all seem to agree that hot rises. But do you think we could figure out why that is so?"

The behavioral indicators for Skill Area #5 are:

High-quality Indicator (2 points): The teacher promotes open inquiry and divergent thinking by giving consideration to all student responses, and by valuing the thinking efforts of students without commending or criticizing the "correctness" of ideas.

Marginal Indicator (1 point): The teacher receives some student responses eagerly and others with noticeable reserve, giving the impression that some are more "worthy" than others. Or, accepted simple, pat answers from pupils without questioning or probing for deeper meanings. These types of sanctioning usually have the undesirable effect of suppressing open inquiry.

Non-Indicator (0 points): The teacher poses as the authority and impedes open inquiry by having the final say about the "rightness" or "wrongness" of learner ideas (or infers the same via non-verbal cues).

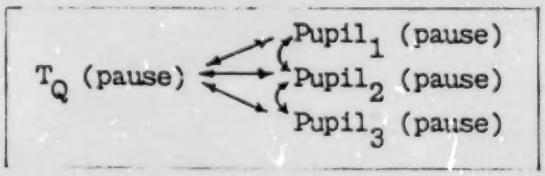
Skill Area #6 (Multiple Pupil Responses and Wait-time)

Two factors are included in this skill area because of their natural relationship to each other in an inquiry setting. The teacher who elicits responses from several pupils for each question asked will keep the focus of the inquiry upon the student participants, and thus avoid becoming the central, dominant figure in the discussion. This practice is referred to as multiple pupil responses.

The second factor, wait-time, provides learners with time to think. It communicates to them that the session is not rushed--that the teacher is not pushing for closure on some predetermined objective. The wait-time pauses are more than simply idle silence. During these periods it is important that the teacher engage in intensive thinking about what is being said, thus serving as a model so pupils can see what it means to ponder and scrutinize the merits of various ideas.

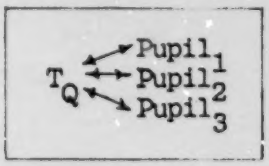
The behavioral indicators for Skill Area #6 are:

High-quality Indicator (3 points): The teacher demonstrates meaningful wait-time, elicits multiple pupil responses to probing questions, and encourages pupils to discuss among themselves in positive, constructive ways. This questioning pattern is represented on the instrument as:

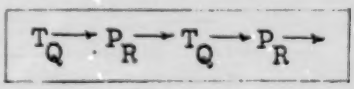


"TQ(pause)" stands for a teacher question, followed by meaningful wait-time. The other symbolism indicates multiple pupil responses, pupil discussing with each other, and wait-time allowed (by the teacher) after pupil responses, to allow for pondering and reasoning. The teacher resists the urge to move too quickly to new areas of questioning.

Medium-quality Indicator (2 points): The teacher is consistent in eliciting multiple pupil responses to the inquiry questions, but significant wait-time is not evident, either before or after pupil responses. This questioning pattern is represented on the instrument as:



Marginal Indicator (1 point): A back-and-forth questioning pattern is evident, in that teacher questions and individual pupil responses alternate repeatedly. To the observer it often appears that multiple pupil responses do not occur because the teacher asks too many questions at too rapid a rate. This questioning pattern is represented on the instrument as:



"TQ" stands for teacher questions, and "PR" represents pupil responses.

Non-Indicator (0 points): The teacher is doing most of the talking, and does little to engage students in discussion.

Skill Area #7 (The Problem)

The successful presentation of a problem (sometimes referred to as a discrepent event, or "a happening") is critical to the success of an inquiry session, since it piques the pupils' interest and focuses attention on the inquiry topic. Problems should be real-life as possible, and for elementary level pupils should be relatively concrete so they can manipulate and/or observe something happening. Elements of surprise and originality are desirable, but not necessary. If the problem is interestingly presented and clearly defined, then pupils who "...have seen this before..." and feel that they understand all about it, can be intellectually challenged by probing questions and by stating and testing hypotheses; while first-time observers can be challenged at more basic levels by stating observations, predicting, discussing, etc.

The behavioral indicators for Skill Area #7 are:

High-quality Indicator (2 points): The problem was provocative, interestingly presented, and clearly understandable by actual observation or vivid word-picture. The teacher adapted the inquiry focus and questions to challenge the intellectual abilities of the pupils.

Marginal Indicator (1 point): The problem was generally defined, and not particularly adapted to the intellectual or experiential levels of the learners.

Non-Indicator (0 points): The presentation of the problem was fuzzy, and failed to stimulate analytical reasoning.

SUMMARY

If teachers are to be trained in inquiry teaching techniques, it is imperative that basic competencies be assessable. The literature reviewed in connection with this project suggests that the seven major skill areas represented on the Inquiry Teaching Competency Assessment comprise a composite definition of the teaching skills that are essential for facilitating pupil learning by inquiry. The instrument presented in this monograph is one of the first tools available for providing a comprehensive skill assessment in this area.

Preliminary feedback from users of the instrument indicates that inquiry teaching skills are easier to comprehend, and that performance feedback is more precise (and therefore more useful) when the instrument is utilized in conjunction with formal inquiry training. Feedback from other users is welcomed by the author.

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INQUIRY TEACHING COMPETENCY ASSESSMENT

Teacher Name: _____

Critiqued by: _____

Date: _____

Directions: Rate the teacher's performance for each of the seven Inquiry Skill Areas shown below by circling the point-values associated with the Observed Behaviors.

Inquiry Skill Areas	Observed Behaviors	Points
1. Teacher-Pupil Roles: The focus of the lesson was upon pupil involvement in questioning and figuring-out; not upon the teacher "teaching" a lesson, or leading pupils to predetermined outcomes. Teacher managed pupil behavior to create/maintain a climate for thinking.	• Teacher taught an information-centered lesson	0
	• Teacher directed too little/too much, or led pupils to predetermined outcomes. Pupils passively involved	1
	• Pupils centrally involved, figuring-out, questioning; Teacher actively facilitating and modeling "thinking" behaviors; expected pupil attention to probing questions.	2
2. Learning Process Skills: The lesson increased pupil skills in learning processes as checked below. (Please focus on 2-3 skills) ____Hypothesizing ____Collecting & Interpreting Data ____Measuring / Using Numbers ____Predicting / Estimating ____Classifying / Seeing Relationships ____Experimenting ____Analyzing / Verbal Reasoning ____Considering Alternatives ____Planning for Use of Resources	• Lesson centered on content teaching.	0
	• Lesson was part content and part process centered; little evidence of increase in skills	1
	• Lesson centered on learning processes and increased pupil process-learning skills	2
3. Questioning Technique: The teacher questions were open and provided focus for the inquiry. Probing questions encouraged search for deeper meanings.	• Less than 1/3 of the teacher questions were open. Focus was absent	0
	• 1/3 to 2/3 of the teacher questions were open; Focus seemed weak.	1
	• Teacher questions were predominantly open and focus setting. Probing questions caused pupils to think beyond simple or pat answers	2

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Inquiry Skill Areas	Observed Behaviors	Points
4. Reinforcement: Pupil "thinking behaviors" were promoted by verbal and nonverbal reinforcement.	• Little reinforcement was evident	0
	• Reinforcement of a general nature was evident	1
	• Teacher's discriminated reinforcement promoted pupil "thinking behaviors". Efforts were made to involve all pupils	2
5. Non-Sanctioning: Teacher gave positive consideration to all pupil responses; did not imply "rightness" or "wrongness" of responses.	• Teacher dwelled on the "rightness" or "wrongness" of pupil responses	0
	• Teacher gave open consideration to some pupil responses, but responded to some with sanctioning	1
	• Teacher gave active consideration to all pupil responses without sanctioning; encouraged pupils to explore more fully	2
6. Multiple Responses & Wait-time: Multiple pupil responses were solicited for all teacher questions; 'Wait-time' was allowed for pupils to think. Teacher interactions prompted pupils to discuss among themselves in positive, constructive ways.	• Teacher mainly talked "at" the pupils.	0
	• Teacher did 1/2 or more of the talking (i.e., $T_Q \rightarrow P_R \rightarrow T_Q \rightarrow P_R \rightarrow$ etc.)	1
	• $T_Q \rightleftarrows$ Pupil$_1$, Pupil$_2$, Pupil$_3$	2
	• T_Q (pause) $\rightleftarrows$ Pupil$_1$ (pause), Pupil$_2$ (pause), Pupil$_3$ (pause)	3
7. The Inquiry Problem: The problem was well defined, stimulating, and intellectually challenging.	• Problem was fuzzy	0
	• Problem was fairly well defined, but little adaptation to experience levels of pupils was evident	1
	• Problem was clearly defined and provocative. Teacher adapted the inquiry to challenge intellectual abilities of pupils	2

Remedial Prescription (if applicable): _____

_____

TOTAL POINTS [/15]